CLAIMS:

1. A framed sheet for use in manufacturing a microelectronic component comprising:

(a) a frame having an aperture and a structure;

(b) a flexible sheet having oppositely-facing exterior surfaces and a first metallic layer at a first said exterior surface, a main region of said sheet extending across said aperture, said first exterior surface of said flexible sheet being bonded to said structure so that said frame holds said sheet taut, said frame further having at least one contact opening extending through said structure, said sheet including at least one contact region aligned with said contact opening whereby said first metallic layer is exposed at said contact opening for engagement with an electrical contact during processing, the bond between the sheet and the structure including an inner bond region in the vicinity of said contact opening so that said inner bond region mechanically isolates the contact region from said main region of said sheet, whereby engagement of an electrical contact with said contact region of said sheet will not cause deformation of said main region.

2. A framed sheet as claimed in claim 1 wherein said structure of said frame is at least partially formed from a dielectric material.

3. A framed sheet as claimed in claim 1 wherein said aperture has an external shape generally in the form of a polygon, said at least one contact opening including a plurality of contact openings disposed adjacent corners of said polygon.

4. A framed sheet as claimed in claim 3 wherein said polygon is rectangular.

5. A framed sheet as claimed in claim 1 wherein said at least one contact opening includes at least one slot extending outwardly from said aperture, and wherein said inner bond region includes bonded regions bordering each such slot.

6. A framed sheet as claimed in claim 1 wherein said at least one contact opening includes at least one hole extending through said structure, so that said inner bond region includes a bonded region disposed between each such hole and said aperture.

7. A method of making framed sheets as claimed in claim 1, the method comprising the steps of:

(a) providing an elongated strip of a flexible sheet material, said strip having a pair of opposite edges; and

(b) bonding a frame to the first said strip so that said strip forms said sheet of said framed sheet and so that each said contact opening is disposed adjacent an edge of said strip.

8. An article for use in manufacturing a microelectronic component comprising:

(a) a flexible sheet having oppositely-facing exterior surfaces; and

(b) a frame having an aperture and a structure secured to said sheet so that a portion of said sheet extends across said aperture and said structure holds the sheet taut, said flexible sheet including a dielectric layer and a metal layer on a surface of the sheet, said metal layer having substantially uniform distribution of metal within an edge region adjacent said structure.

9. An article as claimed in claim 8 wherein said metal layer is substantially continuous in said edge region.

10. An article as claimed in claim 8 wherein said metal layer includes a plurality of discrete metallic features distributed uniformly in said edge region.

11. An article as claimed in 8 wherein at least one said metal layer includes a grid of intersecting metallic strips defining a plurality of open areas therebetween, said grid pattern extending throughout a middle portion of said sheet remote from said structure, the metal layer further including metallic features disposed in said open areas at least in said middle portion of said sheet.

12. A method of processing a sheet for forming microelectronic components comprising the steps of:

(a) providing a framed sheet including (i) a frame having an aperture and a structure, and (ii) a sheet extending across the aperture and bonded to the structure of the frame so that the frame holds the sheet taut, said sheet including a substantially continuous first metal layer on a first surface thereof;

(b) performing one or more processing operations on said sheet while said first metal layer remains substantially continuous; then

(c) partially or completely removing said first metal layer.

13. A method as claimed in claim 12 wherein said step of performing one or more processing operations includes the step of registering features on said flexible sheet with an external element other than said framed sheet.

14. An article for use in manufacturing a microelectronic component comprising:

(a) a flexible sheet having oppositely-facing exterior surfaces; and

(b) a frame having an aperture and a structure, and having a mounting surface with inner edges bounding said aperture and outer edges remote from said aperture, said flexible sheet being bonded to said mounting surface so that said frame holds said sheet taut and so that an exterior surface of said sheet is exposed through said aperture, said sheet being sealed to said mounting surface over the entirety of said edges of said mounting surface.

15. An article as claimed in claim 14 wherein said sheet is sealed to said mounting surface over essentially the entire mounting surface so that there are essentially no gaps between the sheet and the mounting surface.

16. An article for use in manufacturing a microelectronic component comprising:

(a) a flexible sheet having oppositely-facing exterior surfaces;

(b) a frame having an aperture and a structure, and having a mounting surface facing in a forward direction with an inner edge bounding said aperture, said structure including an inner edge surface intersecting said mounting surface at said inner edge and extending rearwardly away from said mounting surface, said flexible sheet being bonded to said mounting surface so that said frame holds said sheet taut, so that a first exterior surface of said sheet overlies said mounting surface and so that said first exterior surfaces of said sheet is exposed through said aperture, said sheet being

sealed to said mounting surface at least along said inner edge of said mounting surface; and .

(c) a fillet joining said first exterior surface of said sheet and said inner edge surface.

17. An article as claimed in claim 16 wherein said frame has a rear surface extending generally parallel to said mounting surface adjacent said inner edge, said rear surface being less than about 10mm from said mounting surface at said inner edge.

18. An article as claimed in claim 17 wherein said frame has a radius joining said rear surface and said inner edge surface.

19. An article as claimed in claim 16 wherein said inner edge surface slopes outwardly, away from said inner edge.

20. A method of processing an article as claimed in claim 16 comprising the step of exposing the article to a first treating liquid, terminating such exposure and removing the first treating liquid from the aperture of the frame, whereby said fillet facilitates removal of the first treating liquid.

21. A method of making framed sheets for use in microelectronics component manufacturing, the method comprising the steps of:

(a) providing a sheet of a flexible material;

(b) applying at least one metallic layer on said sheet ; and

(c) bonding a plurality of frames each having an aperture and a structure to said flexible sheet so that that a series of central regions of said sheet are exposed through said apertures of said frames and so that each frame holds one such central region taut, said

applying and bonding steps being performed so that each said central region of said sheet is not contacted by any solid object between completion of said applying step for that region and said bonding step.

22. A method as claimed in claim 21 wherein said providing step includes the step of providing said sheet as a continuous strip, the method further including the step of feeding the strip in substantially continuous motion in a downstream direction through said applying step and said bonding step.

23. A method as claimed in claim 21 wherein said providing step includes the step of forming said sheet material and wherein said applying and bonding steps are performed so that said central regions of said sheet are not contacted by any other portion of said strip between completion of the forming step and the bonding step.

24. An article for use in manufacturing a microelectronic component comprising:

(a) a flexible sheet having oppositely-facing exterior surfaces; and

(b) a frame assembly including structure defining an aperture, said structure having a neutral plane in bending, said sheet being secured to said structure and extending across said aperture, said structure holding said sheet in tension, said sheet being disposed adjacent said neutral plane of said frame assembly.

25. An article as claimed in claim 24 wherein said frame assembly includes a single frame having portions extending on both sides of the sheet.

26. An article as claimed in claim 24 wherein said frame assembly includes a pair of frames each having

an aperture, said structures of said frames being disposed on opposite surfaces of said sheet, the apertures of said frames being aligned with one another.

27. A method of processing a flexible sheet for forming microelectronic components comprising the steps of:

(a) temporarily holding the flexible sheet in engagement with a fixture so that the sheet overlies a loop-like groove in the fixture and so that a first surface of the sheet faces away from the groove and a second surface of the sheet faces toward the groove;

(b) applying a differential fluid pressure between the first and second surfaces at the groove so that the fluid pressure on the first surface is higher than the fluid pressure in the groove on the second surface, whereby the differential fluid pressure will force the sheet into the groove and pull a central portion of the sheet surrounded by the groove taut;

(c) while the central portion of the sheet is taut, engaging a frame with the central portion of the sheet so that the sheet extends across an aperture in the frame and so that structure of the frame on opposite sides of the aperture engages the sheet, and securing the structure of the frame to the central portion of the sheet; and

(d) releasing the sheet from the fixture, whereby the frame will hold the sheet taut.

28. A method as claimed in claim 27 wherein said step of applying a differential fluid pressure includes the step of applying a subatmospheric pressure within the groove.

29. A method as claimed in claim 27 further comprising the step of providing a fluid in contact with

the second surface of the sheet in the central portion thereof so that the fluid enters between the fixture and the second surface of the sheet in the central region thereof.

30. A method as claimed in claim 27 wherein said engaging and securing step includes the step of bonding the sheet to the structure.

31. A method as claimed in claim 27 wherein further comprising the step of heating said sheet prior to or during said step of applying a differential fluid pressure so that the applied heat causes said sheet to expand.

32. A method of making a framed sheet for use in manufacture of microelectronic components comprising the steps of:

(a) providing a flexible sheet and a frame having a structure defining an aperture;

(b) juxtaposing said frame and said sheet;

(c) providing a controlled amount of adhesive between said frame and said sheet;

(d) urging said frame and said sheet towards one another with a controlled force so as to squeeze said adhesive and cause said adhesive to form a fillet extending between said sheet and said frame structure around said aperture; and

(e) curing said adhesive so as to bond said frame and said flexible sheet.

33. A method as claimed in claim 32 wherein said curing step includes the step of applying light to said adhesive and during said urging step.

34. A method as claimed in claim 32 further comprising the step of maintaining said flexible sheet in tension during said steps (b) through (e).

35. A method of processing a flexible sheet for forming microelectronic components comprising the steps of:

(a) engaging the sheet with an annular fixture having an inner edge encircling a center hole so that the sheet is secured to the fixture along a generally circular line of engagement encircling the inner edge of the annular fixture on a first surface of the annular fixture facing in a first direction; and

(b) deforming the annular fixture to a frustoconical shape with said first surface of the fixture on the outside so that the inner edge of the annular fixture moves in said first direction relative to said line of engagement in said deforming step, whereby a central region of the sheet overlying the center hole is stretched taut.

36. A method of processing a flexible sheet for forming microelectronic components comprising the steps of:

(a) temporarily holding the flexible sheet taut;

(b) forming a frame structure in situ on the taut sheet so that a central portion of the sheet extends across an aperture in the frame and so that structure of the frame on opposite sides of the aperture is secured to the sheet; and

(c) discontinuing the temporary holding step.

37. A method as claimed in claim 36 wherein said step of forming a frame structure includes the step of applying a mold in engagement with at least one surface of the sheet, applying a fluid material in said mold and solidifying the fluid material in contact with the sheet.

38. An article for forming microelectronic components comprising:

(a) an elongated strip of a flexible sheet; and

(b) a plurality of frames secured to said strip along the length thereof, each said frame having an aperture aligned with a region of said strip and structure secured to the strip so that each frame holds the associated region of the strip taut.

39. A method of processing an article as claimed in claim 38 comprising the step of advancing the strip lengthwise through one or more processing stations to engage said frames with each said processing station seriatim and actuating each said processing station to treat the region of said strip held taut by each frame when the frame is aligned with the processing station.

40. A method of forming microelectronic components comprising the steps of:

(a) providing a plurality of framed sheets each including (i) a frame having an aperture and a structure, and (ii) a flexible sheet extending across the aperture and bonded to the structure of the frame so that the frame holds the sheet in tension;

(b) performing one or more processing operations on said framed sheets to form features on at least some of said framed sheets; and then

(c) stacking said framed sheets so that features on one or more of said framed sheets are in registration with features on one or more other ones of said framed sheets.

41. A method as claimed in claim 40, further comprising the step of interconnecting said registered features with one another.

42. A method of making a microelectronic component comprising the steps of:

(a) providing a framed sheet including a flexible sheet and a frame having a structure defining an aperture, the structure of the frame being secured to the sheet so that the frame holds the sheet in tension, the frame and the flexible sheet having different coefficients of thermal expansion;

(b) performing a plurality of operations on features of said flexible sheet using at least one external element other than the framed sheet in at least one such operation;

(c) registering the framed sheet with said external elements by aligning predetermined fiducial locations on said framed sheet with said at least one external element, whereby the frame and the tension in said sheet will enhance repeatability of registration between said flexible sheet and said external elements; and

(d) adjusting the temperature of the framed sheet between at least some of said operations so as to vary the tension in the sheet, so that different ones of said operations are performed with the sheet under different degrees of tension.

43. A method as claimed in claim 42 wherein said operations include a hole-forming operation wherein holes are formed in the sheet, said hole-forming operation being performed while the sheet is under a relatively low tension, said operations including other operations performed while said sheet is under tension higher than said relatively low tension.